

REMARKS/ARGUMENTS

Prior to the entry of this amendment, claims 1-23 were pending. Claims 1, 2, 8-10, and 14-16 have been amended. No claims have been canceled or added. Accordingly, claims 1-23 remain pending in this application.

A final Office Action was mailed November 20, 2006. A response to the final Office Action was mailed March 15, 2007. An Advisory Action was mailed March 23, 2007, indicating that the March 15 response and its claim amendments were NOT entered. Amendments to the claims made herein, therefore, are made to the claims as they were presented in the earlier filed response mailed September 4, 2006.

In the final Office Action, claims 1-3, 6-11, 14-17, and 20 were rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,400,372 to Gossweiler, III et al. (hereinafter "Gossweiler"). Claims 4, 12, and 18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Gossweiler in view of US Patent No. 6,559,845 to Harvill et al. (hereinafter "Harvill"). Claims 5, 13, and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Gossweiler in view of US Patent No. 6,353,437 to Gagne (hereinafter "Gagne"). Applicant respectfully requests reconsideration for at least the reasons presented below.

I. THE CLAIMED INVENTION

Embodiments of the present invention relate to improved techniques for specifying scene data for computer animation.

In the prior art, an animation scene is typically described by a scene descriptor file. This file contains information about the objects, camera angles, lighting sources, etc. within the scene. Most commonly, a scene descriptor file is loaded into memory, and the data specified in the file is subsequently used to render the scene. A scene may be rendered for any number of reasons, including determining if the lighting is aesthetically pleasing, determining whether the colors and textures match, reviewing the visual arrangement or composition, creating a final rendering, and the like. Paragraph 8.

A problem discussed in the Background of the invention occurs when an animation scene become very complex. For example, Pixar is well-known for producing scenes with ever-increasing detail and complexity. In this case, the scene descriptor file may contain so many elements that it is too large to fit within the memory space of an animator's computer. Even if the computer has sufficient memory, animators may have to wait an undesirably long time for the large descriptor file to be retrieved from storage, and for the corresponding scene to be rendered. Paragraph 9.

Embodiments of the present invention address the foregoing problem and other such problems by allowing a user (*e.g.*, animator) to select a specific rendering option or mode when rendering a scene. As described above, a scene may be rendered to accomplish a number of different tasks, such as previewing lighting. Typically, each task requires only a subset of the elements in the scene to be rendered at the highest quality (or at all). The selected rendering option instructs an animator's computer to load into memory only those scene elements that are necessary for a desired task. Thus, for example, a rendering option for previewing lighting may load all of the light sources for the scene, but may not load all of the model objects. In this manner, the problems associated with loading and rendering a large, complex scene descriptor file can be avoided. Paragraph 158; Figs. 2A and 2B.

In a first set of embodiments, the scene elements are retrieved into computer memory from object files in a flat file system. In a second set of embodiments, the scene elements are retrieved from an external database or asset management system (*e.g.*, 510 of Fig. 5).

II. THE CITED REFERENCES

A. Gossweiler

Gossweiler is directed to a system for determining different levels of detail (LOD) for objects based on available processing resources. As described in Gossweiler, "in an interactive or real-time computing environment involving complex three-dimensional computer graphics, it is desirable to maintain a constant frame rate... In order to provide a smooth frame

rate and interactivity, levels of detail for the various objects are chosen such that all objects can be drawn in the predetermined maximum amount of time determined by the desired frame rate." Col. 8 line 55 - col. 9, line 2, emphasis added.

Thus, Gossweiler is concerned with determining, in real-time, the optimal LOD for each object in a scene to maintain a smooth, consistent frame rate.

B. Havill

Havill relates to a method for transferring animation data over a "low bandwidth" communications network.

C. Gagne

Gagne relates to a method for defining groups of associated objects in an animation environment.

III. THE CITED REFERENCES DISTINGUISHED

A. Claim 1

Claim 1 is not disclosed, taught, or suggested by Gossweiler. Amended claim 1 recites, in part:

A method for rendering a frame of animation in a computer system having a computer memory, the method comprising:...

querying a database external to the computer system for a first representation of the one object in response to the first specification of the object when the selection is of the first rendering option;
receiving the first representation of the object from the database external to the computer system when the selection is of the first rendering option; [and]...

rendering the object for the frame of animation using the first representation of the object when the selection is of the first rendering option;
wherein the first representation of the object is not loaded into the computer memory when the selection is of the second rendering option.
(Applicant's claim 1 in part, as amended, emphasis added)

Gossweiler fails to teach or suggest the above limitations, including "querying a database external to the computer system for a first representation of [an] object," "receiving the

first representation of the object form the database external to the computer system," and "wherein the first representation of the object is not loaded into the computer memory when the selection is of the second rendering option."

Applicant submits that Gossweiler is completely silent on querying a database external to the computer system to retrieve a first representation of an object in response to a selection of a first rendering option. Furthermore, contrary to the Examiner's assertions, Applicant submits that it would not be obvious to one of ordinary skill in the art to incorporate such a feature into the real-time LOD rendering method of Gossweiler. As quoted above, the purpose of Gossweiler is to maintain a smooth, real-time frame rate when rendering a 3D scene. Thus, all models must loaded and accessible via high speed memory during the rendering process. In contrast, it is well known that a database query is a relatively slow operation, and is many orders of magnitude slower than accessing data in random-access memory (RAM). Accordingly, one of ordinary skill in the art would recognize that querying a database for LOD models on a per-frame basis (as suggested by the Examiner) would be far too slow to support real-time rendering as emphasized by Gossweiler.

In the Advisory Action, the Examiner asserted "the Applicant argues that Gossweiler teaches away from the concept of querying a database to retrieve different LOD models for an object as needed; however, applicant has not pointed out why the motivation in the previous rejection is insufficient." The Applicant respectfully disagrees. As explained in the previous response, and as explained above, one of ordinary skill in the art would not combine database access with the LOD rendering method of Gossweiler because it would be far too slow to support real-time rendering. Section 2143.01 of the MPEP states:

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.

Here, the Examiner's suggestion that Gossweiler be modified to retrieve LOD models from a database would render Gossweiler unsatisfactory for its intended purpose -- maintaining a smooth, interactive frame rate. As such, Applicant respectfully submits that there is no suggestion or motivation to make this modification.

Since Gossweiler fails to teach or even suggest "querying a database external to the computer system," Gossweiler also necessarily fails to teach or suggest "receiving the first representation of the object from the database external to the computer system" as recited in claim 1.

Furthermore, Applicant submits that Gossweiler fails to teach (and in fact, teaches away from) "wherein the first representation of the object is not loaded into the computer memory when the selection is of the second rendering option" as recited in claim 1. As discussed above, one of ordinary skill in the art would appreciate that all of the LOD models in Gossweiler must be stored in working memory simultaneously to support a smooth, consistent framerate. Thus, modifying Gossweiler as suggested by the Examiner to incorporate this limitation would render Gossweiler unsatisfactory for its intended purpose.

For at least the foregoing reasons, Applicant submits that claim 1 is not obvious in view of Gossweiler and the rejection should be withdrawn.

B. Claims 8 and 14

Amended independent claims 8 and 14 recite limitations that are substantially similar to amended claim 1. As such, claims 8 and 14 are asserted to be allowable for substantially the same reasons as claim 1, as well as for the additional limitations they recite.

C. Remaining Claims

Claims 2-7 and 21-23, which depend from claim 1, are asserted to be allowable for substantially the same reasons as claim 1, as well as for the additional limitations they recite.

Claims 9-13, which depend from claim 8, are asserted to be allowable for substantially the same reasons as claim 8, as well as for the additional limitations they recite.

Claims 15-20, which depend from claim 14, are asserted to be allowable for substantially the same reasons as claim 14, as well as for the additional limitations they recite.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

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